









TEST REPORT IEC 60950-1 Information technology equipment – Safety – Part 1: General requirements											
Report Number..... : AE17-0014337-01 Date of issue..... : 24.01.2018 Total number of pages 47											
Applicant's name 4 BOX S.r.l. Address Piazzale Segesta, 15 I-20148 Milano											
Test specification: Standard..... : IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 Test procedure CB Scheme Non-standard test method N/A											
Test Report Form No. : IEC60950_1F Test Report Form(s) Originator : SGS Fimko Ltd Master TRF..... : Dated 2014-02 Copyright © 2014 IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System). All rights reserved. This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context. If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed. This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.											
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<table border="1"> <tr> <td style="width: 40%;">Test item description..... :</td> <td>USB power unit</td> </tr> <tr> <td>Trade Mark..... :</td> <td></td> </tr> <tr> <td>Manufacturer</td> <td>4 BOX S.r.l. Piazzale Segesta, 15 I-20148 Milano</td> </tr> <tr> <td>Model/Type reference</td> <td>See "General product information"</td> </tr> <tr> <td>Ratings</td> <td>100-230V~, 50/60Hz, 0.3A Output: 5V , 2.4A</td> </tr> </table>		Test item description..... :	USB power unit	Trade Mark..... :		Manufacturer	4 BOX S.r.l. Piazzale Segesta, 15 I-20148 Milano	Model/Type reference	See "General product information"	Ratings	100-230V~, 50/60Hz, 0.3A Output: 5V  , 2.4A
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Testing procedure and testing location:		
<input checked="" type="checkbox"/>	CB Testing Laboratory:	IMQ S. p. A.
Testing location/ address.....:		Via Quintiliano 43, I-20138 Milano
<input type="checkbox"/>	Associated CB Testing Laboratory:	
Testing location/ address.....:		
Tested by (name + signature)		M. Giacometti (Laboratory Engineer)
Approved by (name + signature)		S. Bilotta (Laboratory Manager)
<input type="checkbox"/>	Testing procedure: TMP/CTF Stage 1:	
Testing location/ address.....:		
Tested by (name + signature)		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: WMT/CTF Stage 2:	
Testing location/ address.....:		
Tested by (name + signature)		
Witnessed by (name + signature).....:		
Approved by (name + signature)		
<input type="checkbox"/>	Testing procedure: SMT/CTF Stage 3 or 4:	
Testing location/ address.....:		
Tested by (name + signature)		
Witnessed by (name + signature).....:		
Approved by (name + signature)		
Supervised by (name + signature)		

List of Attachments (including a total number of pages in each attachment):

Test Report, pages 47

Annex 1 : photo, pages 4

Annex 2 : Attachment To Test Report Iec 60950-1 European Group Differences And National Differences, pages 19

Annex 3 : Drawings, pages 2

Summary of testing:**Tests performed (name of test and test clause):**

1.6 electrical data (in normal conditions)
 1.7.11 Durability
 2.2 SELV circuits
 2.4 Limited current circuits
 2.5 Limited power sources
 2.10.2 Determination of working voltage
 2.10.3; 2.10.4 Clearance And Creepage Distance Measurements
 2.10.5 Distance through insulation measurements
 2.9.2 Humidity conditioning
 4.5 Thermal requirements
 4.5.5 Resistance to abnormal heat
 5.1 Touch current and protective conductor current
 5.2 Electric Strength Tests And Impulse Tests
 5.3.7 Simulation of faults
 20.1 Mechanical Strength of the IEC 60669-1:1998 (Third edition) + A1:1999 + A2:2006.

Testing location:

IMQ S. p. A.

Via Quintiliano 43, I-20138 Milano

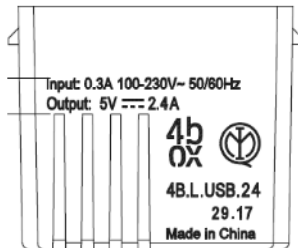
Summary of compliance with National Differences:**List of countries addressed**

IEC 60950-1, GROUP DIFFERENCES (CENELEC common modifications EN)

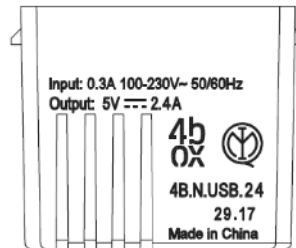
☐ The product fulfils the requirements of _____ (insert standard number and edition and delete the text in parenthesis, leave it blank or delete the whole sentence, if not applicable)

Copy of marking plate:

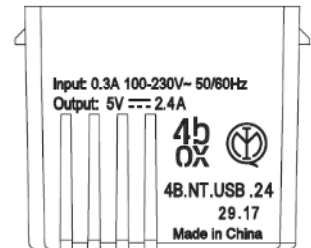
The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



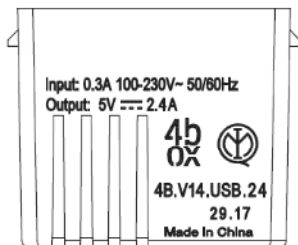
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(LIVING)



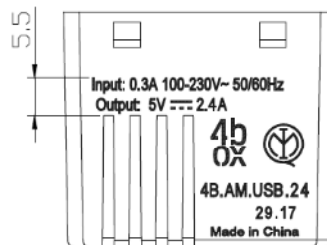
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(LIVING)



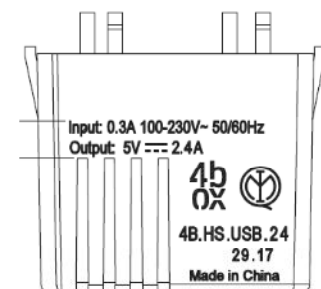
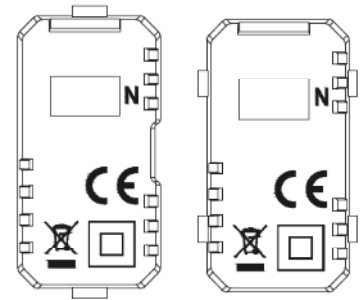
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(LIVING)



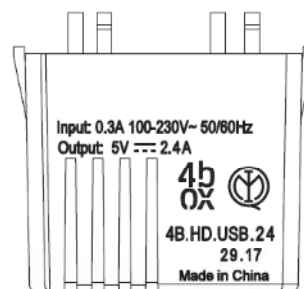
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(PLANA)



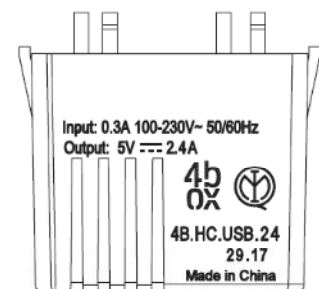
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(MATIX)



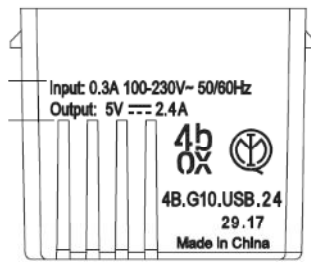
LF40044-U2AX-G
(AXOLUTE)



LF40044-U2AX-W
(AXOLUTE)

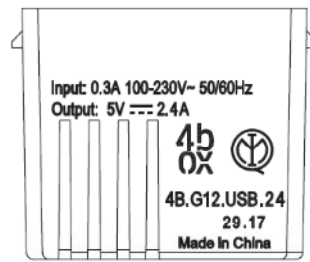


LF40044-U2AX-SL2
(AXOLUTE)



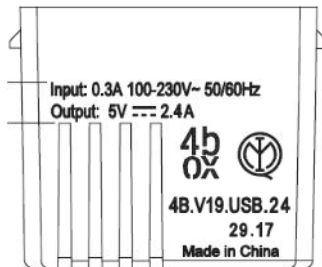
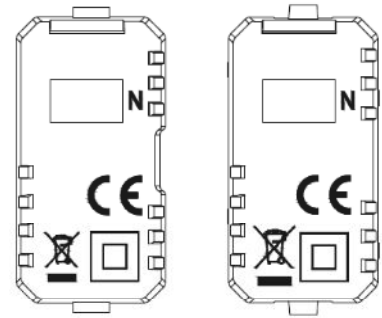
LF40044-U2C-W

(CHORUS)



LF40044-U2C-G

(CHORUS)



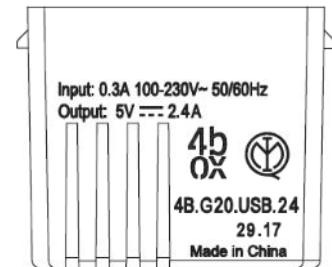
LF40044-U2AR-G

(ARKE)



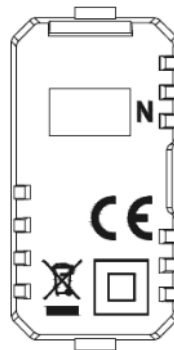
LF40044-U2AR-W

(ARKE)



LF40044-U2SY-W

(SYSTEM)



Test item particulars.....:	
Equipment mobility.....:	<input type="checkbox"/> movable <input type="checkbox"/> hand-held <input type="checkbox"/> transportable <input checked="" type="checkbox"/> stationary <input checked="" type="checkbox"/> for building-in <input type="checkbox"/> direct plug-in
Connection to the mains.....:	<input type="checkbox"/> pluggable equipment <input type="checkbox"/> type A <input type="checkbox"/> type B <input checked="" type="checkbox"/> permanent connection <input type="checkbox"/> detachable power supply cord <input type="checkbox"/> non-detachable power supply cord <input type="checkbox"/> not directly connected to the mains
Operating condition.....:	<input checked="" type="checkbox"/> continuous <input type="checkbox"/> rated operating / resting time:
Access location	<input checked="" type="checkbox"/> operator accessible <input type="checkbox"/> restricted access location
Over voltage category (OVC)	<input type="checkbox"/> OVC I <input type="checkbox"/> OVC II <input checked="" type="checkbox"/> OVC III <input type="checkbox"/> OVC IV <input type="checkbox"/> other:
Mains supply tolerance (%) or absolute mains supply values	±10%
Tested for IT power systems	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
IT testing, phase-phase voltage (V)	
Class of equipment	<input type="checkbox"/> Class I <input checked="" type="checkbox"/> Class II <input type="checkbox"/> Class III <input type="checkbox"/> Not classified
Considered current rating of protective device as part of the building installation (A)	16A
Pollution degree (PD)	<input type="checkbox"/> PD 1 <input checked="" type="checkbox"/> PD 2 <input type="checkbox"/> PD 3
IP protection class	IP-
Altitude during operation (m)	2000m
Altitude of test laboratory (m)	122m
Mass of equipment (kg)	/
Possible test case verdicts:	
- test case does not apply to the test object.....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	
Date of receipt of test item	22.03.2017; 28.04.2017; 23.06.2017; 19.09.2017; 22.01.2018 (Item sent and sampling by the applicant)
Date of acceptance	22.03.2017; 28.04.2017; 23.06.2017; 19.09.2017; 22.01.2018
Date (s) of performance of tests	06.04.2017 – 19.04.2017; 03.08.2017 - 03.08.2017; 23.01.2018
No. Samples tested	5
No. B.E.M. (ref. IMQ)	85588; 86153; 87045; 87941; 89387

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Unless otherwise stated the uncertainties for the tests and measurements are evaluated in according to IMQ Operational Instruction IO-LAB-001 and IO-LAB-004.

The uncertainties evaluation has been carried out in accordance with IEC Guide 115 "Application of Uncertainty of measurement's to Conformity Assessment Activity in the Electrotechnical Sector" and IECCE OD-5014.

Internal Procedure PG-037 ensure that the requirements for traceability of calibrations, of all test equipment requiring calibration, and calibration intervals are met.

The ability or reliability of this product to perform its intended function in a particular application has not been investigated.

Unless otherwise specified, warnings, installation instruction and/or user manual provided with the sample have been checked in Italian or English version only.

Manufacturer's Declaration per sub-clause 4.2.5 of IEC60950-1:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided

☐ Yes
☒ Not applicable

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) : LUMI LEGEND ELECTRICAL Co., LTD
 No. 18, LANE 239, BEIHAI ROAD, JIANGBEI,
 NINGBO 315032, P.R. CHINA

General product information:

The EUT is a USB power unit, provided with an USB output to 2.4A, it's designed for a flush mounting.

It can be marketed with the following codes:

Type 4B.N.USB.24 for Bticino series LIVINGLIGHT (WHITE)
 Type 4B.L.USB.24 for Bticino series LIVINGLIGHT (ANTHRACITE)
 Type 4B.AM.USB.24 for Bticino series MATIX (WHITE)
 Type 4B.NT.USB.24 for Bticino series LIVINGLIGHT (TECH)
 Type 4B.V14.USB.24 for VIMAR series PLANA (WHITE)
 Type 4B.V19.USB.24 for VIMAR series ARKE' (GRAY)
 Type 4B.V19B.USB.24 for VIMAR series ARKE' (WHITE)
 Type 4B.G20.USB.24 for GEWISS series SYSTEM (WHITE)
 Type 4B.HS.USB.24 for Bticino series AXOLUTE (DARK GRAY)
 Type 4B.HD.USB.24 for Bticino series AXOLUTE (WHITE)
 Type 4B.HC.USB.24 for Bticino series AXOLUTE (SILVER)
 Type 4B.G10.USB.24 for GEWISS series CHORUS (WHITE)
 Type 4B.G12.USB.24 for GEWISS series CHORUS (BLACK)

Conditions of acceptability:

- Ambient operating temperature 45°C.
- The protection of the power cables must be evaluated in the final installation.
- The EUT is in conformity with the relevant standard if installed with the certified accessories listed in the General product information.
- The appliance must be installed away from heat sources.
- Flush mounting equipment.

General consideration:

/

Load conditions:

USB loaded with 2.4A.

Abbreviations used in the report:

- normal conditions	N.C.	- single fault conditions	S.F.C
- functional insulation	OP	- basic insulation	BI
- double insulation	DI	- supplementary insulation	SI
- between parts of opposite polarity	BOP	- reinforced insulation	RI

Indicate used abbreviations (if any)

IEC60950_1F			
Clause	Requirement + Test	Result - Remark	Verdict




1	GENERAL		-
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1.5	Components		-
1.5.1	General		-
	Comply with IEC 60950-1 or relevant component standard	(see appended tables 1.5.1)	P
1.5.2	Evaluation and testing of components	Certified components are used in accordance with their certified ratings and they comply with applicable parts of IEC 950. Components not certified are used in accordance with their ratings and they comply with applicable parts of IEC 950. Components, for which no relevant IEC or EN standards exist, have been tested under the conditions occurring in the equipment.	P
1.5.3	Thermal controls		N/A
1.5.4	Transformers	(see annex C and table 5.3)	P
1.5.5	Interconnecting cables		N/A
1.5.6	Capacitors bridging insulation	(see appended tables 1.5.1)	P
1.5.7	Resistors bridging insulation	Not provided.	N/A
1.5.7.1	Resistors bridging functional, basic or supplementary insulation	Not provided.	N/A
1.5.7.2	Resistors bridging double or reinforced insulation between a.c. mains and other circuits	Not provided.	N/A
1.5.7.3	Resistors bridging double or reinforced insulation between a.c. mains and antenna or coaxial cable	Not provided.	N/A
1.5.8	Components in equipment for IT power systems	Not intended for IT system.	N/A
1.5.9	Surge suppressors		-
1.5.9.1	General	(see appended tables 1.5.1)	P
1.5.9.2	Protection of VDRs	(see appended tables 1.5.1)	P
1.5.9.3	Bridging of functional insulation by a VDR	(see appended tables 1.5.1)	P
1.5.9.4	Bridging of basic insulation by a VDR		N/A
1.5.9.5	Bridging of supplementary, double or reinforced insulation by a VDR		N/A

1.6	Power interface		-
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Clause	Requirement + Test	Result - Remark	Verdict

1.6.1	AC power distribution systems	TT	P
1.6.2	Input current	(see appended table 1.6.2)	P
1.6.3	Voltage limit of hand-held equipment		N/A
1.6.4	Neutral conductor		P

1.7	Marking and instructions		-
1.7.1	Power rating and identification markings	Installation performed by the service person only.	P
1.7.1.1	Power rating marking		P
	Multiple mains supply connections.....:		N/A
	Rated voltage(s) or voltage range(s) (V)	100-230V~	P
	Symbol for nature of supply, for d.c. only.....:	USB Output: 	P
	Rated frequency or rated frequency range (Hz) ...:	50/60Hz	P
	Rated current (mA or A)	0.3A	P
1.7.1.2	Identification markings		-
	Manufacturer's name or trade-mark or identification mark		P
	Model identification or type reference	See "General product information" and Copy of marking plate.	P
	Symbol for Class II equipment only		P
	Other markings and symbols		N/A
1.7.1.3	Use of graphical symbols		P
1.7.2	Safety instructions and marking		-
1.7.2.1	General	See installation sheet .	P
1.7.2.2	Disconnect devices	See installation sheet .	P
1.7.2.3	Overcurrent protective device	Mains fuse provided.	N/A
1.7.2.4	IT power distribution systems	EUT not intended for connection to IT power distribution systems.	N/A
1.7.2.5	Operator access with a tool	There are not operator access areas reachable by means of a tool.	N/A
1.7.2.6	Ozone		N/A
1.7.3	Short duty cycles	Continuous operation.	N/A
1.7.4	Supply voltage adjustment		-
	Methods and means of adjustment; reference to installation instructions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

1.7.5	Power outlets on the equipment	Not provided.	N/A
1.7.6	Fuse identification (marking, special fusing characteristics, cross-reference)	Fuses not replaceable by the operator.	P
1.7.7	Wiring terminals		-
1.7.7.1	Protective earthing and bonding terminals		N/A
1.7.7.2	Terminals for a.c. mains supply conductors	Terminal marked with "N".	P
1.7.7.3	Terminals for d.c. mains supply conductors		N/A
1.7.8	Controls and indicators		-
1.7.8.1	Identification, location and marking		N/A
1.7.8.2	Colours		N/A
1.7.8.3	Symbols according to IEC 60417.....	Switch not present.	N/A
1.7.8.4	Markings using figures		N/A
1.7.9	Isolation of multiple power sources		N/A
1.7.10	Thermostats and other regulating devices		N/A
1.7.11	Durability	Test performed.	P
1.7.12	Removable parts	Marking not placed on removable parts.	P
1.7.13	Replaceable batteries		N/A
	Language(s)		—
1.7.14	Equipment for restricted access locations		N/A

2	PROTECTION FROM HAZARDS		-
2.1	Protection from electric shock and energy hazards		-
2.1.1	Protection in operator access areas	The construction of the appliance provides an adequate protection against Operator contact with bare parts at hazardous voltage.	P
2.1.1.1	Access to energized parts	See below.	P
	Test by inspection	No contact with parts mentioned in 2.1.1.1	P
	Test with test finger (Figure 2A)	No accessible hazardous live parts.	P
	Test with test pin (Figure 2B)	No accessible hazardous live parts.	P

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Clause	Requirement + Test	Result - Remark	Verdict

	Test with test probe (Figure 2C)	No accessible hazardous live parts.	N/A
2.1.1.2	Battery compartments		N/A
2.1.1.3	Access to ELV wiring	No internal ELV wirings is present in the appliance.	N/A
	Working voltage (V _{peak} or V _{rms}); minimum distance through insulation (mm)	(see appended tables 2.10.2 and 2.10.5)	—
2.1.1.4	Access to hazardous voltage circuit wiring	No internal Hazardous voltage wiring accessible to the operator.	N/A
2.1.1.5	Energy hazards	No energy hazards in operator access areas.	P
2.1.1.6	Manual controls		N/A
2.1.1.7	Discharge of capacitors in equipment	Fixed installation.	N/A
	Measured voltage (V); time-constant (s)		—
2.1.1.8	Energy hazards – d.c. mains supply		N/A
	a) Capacitor connected to the d.c. mains supply ..		N/A
	b) Internal battery connected to the d.c. mains supply :		N/A
2.1.1.9	Audio amplifiers	Not provided. See cl. 2.1.1.1 See separate test report IEC/EN 60065	N/A
2.1.2	Protection in service access areas	Unintentional contact is unlikely during service operations.	P
2.1.3	Protection in restricted access locations		N/A

2.2	SELV circuits		-
2.2.1	General requirements		P
2.2.2	Voltages under normal conditions (V)	< 42.4 V peak or 60 V d.c.	P
2.2.3	Voltages under fault conditions (V)	No accessible voltage exceeds the SELV limit even after a single fault. < 71 V peak or 120 V d.c.	P
2.2.4	Connection of SELV circuits to other circuits	SELV to SELV	P

2.3	TNV circuits		-
2.3.1	Limits		N/A
	Type of TNV circuits		—

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Clause	Requirement + Test	Result - Remark	Verdict

2.3.2	Separation from other circuits and from accessible parts		N/A
2.3.2.1	General requirements		N/A
2.3.2.2	Protection by basic insulation		N/A
2.3.2.3	Protection by earthing		N/A
2.3.2.4	Protection by other constructions		N/A
2.3.3	Separation from hazardous voltages		N/A
	Insulation employed		—
2.3.4	Connection of TNV circuits to other circuits		N/A
	Insulation employed		—
2.3.5	Test for operating voltages generated externally		N/A

2.4	Limited current circuits		-
2.4.1	General requirements		P
2.4.2	Limit values		P
	Frequency (Hz)		—
	Measured current (mA)	137.6 μ A _{peak}	—
	Measured voltage (V)		—
	Measured circuit capacitance (nF or μ F)		—
2.4.3	Connection of limited current circuits to other circuits		P

2.5	Limited power sources		P
	a) Inherently limited output	(see appended table 2.5 and 5.3)	P
	b) Impedance limited output		N/A
	c) Regulating network or IC current limiter, limits output under normal operating and single fault condition	(see appended table 2.5 and 5.3)	N/A
	Use of integrated circuit (IC) current limiters	(see appended table 5.3)	N/A
	d) Overcurrent protective device limited output		N/A
	Max. output voltage (V), max. output current (A), max. apparent power (VA)	(see appended table 2.5)	—
	Current rating of overcurrent protective device (A) ..		—

2.6	Provisions for earthing and bonding		-
2.6.1	Protective earthing	Class II appliance.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

2.6.2	Functional earthing		N/A
	Use of symbol for functional earthing		N/A
2.6.3	Protective earthing and protective bonding conductors		N/A
2.6.3.1	General		N/A
2.6.3.2	Size of protective earthing conductors		N/A
	Rated current (A), cross-sectional area (mm ²), AWG		—
2.6.3.3	Size of protective bonding conductors		N/A
	Rated current (A), cross-sectional area (mm ²), AWG		—
	Protective current rating (A), cross-sectional area (mm ²), AWG		
2.6.3.4	Resistance of earthing conductors and their terminations; resistance (Ω), voltage drop (V), test current (A), duration (min)	(See table 2.6.3.4)	N/A
2.6.3.5	Colour of insulation		N/A
2.6.4	Terminals		-
2.6.4.1	General		N/A
2.6.4.2	Protective earthing and bonding terminals		N/A
	Rated current (A), type, nominal thread diameter (mm)	(See component list)	—
2.6.4.3	Separation of the protective earthing conductor from protective bonding conductors		N/A
2.6.5	Integrity of protective earthing		N/A
2.6.5.1	Interconnection of equipment		N/A
2.6.5.2	Components in protective earthing conductors and protective bonding conductors		N/A
2.6.5.3	Disconnection of protective earth		N/A
2.6.5.4	Parts that can be removed by an operator		N/A
2.6.5.5	Parts removed during servicing		N/A
2.6.5.6	Corrosion resistance	No risk of corrosion. (see annex J)	N/A
2.6.5.7	Screws for protective bonding		N/A
2.6.5.8	Reliance on telecommunication network or cable distribution system		N/A

2.7	Overcurrent and earth fault protection in primary circuits		-
2.7.1	Basic requirements	Primary fuse provided	P

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Clause	Requirement + Test	Result - Remark	Verdict

	Instructions when protection relies on building installation		N/A
2.7.2	Faults not simulated in 5.3.7		-
2.7.3	Short-circuit backup protection	Permanently connected.	P
2.7.4	Number and location of protective devices:	Primary fuse and device in the building installation.	P
2.7.5	Protection by several devices		N/A
2.7.6	Warning to service personnel.....:		N/A

2.8	Safety interlocks		-
2.8.1	General principles		N/A
2.8.2	Protection requirements		N/A
2.8.3	Inadvertent reactivation		N/A
2.8.4	Fail-safe operation		N/A
	Protection against extreme hazard		N/A
2.8.5	Moving parts		N/A
2.8.6	Overriding		N/A
2.8.7	Switches, relays and their related circuits		N/A
2.8.7.1	Separation distances for contact gaps and their related circuits (mm):		N/A
2.8.7.2	Overload test		N/A
2.8.7.3	Endurance test		N/A
2.8.7.4	Electric strength test	(see appended table 5.2)	N/A
2.8.8	Mechanical actuators		N/A

2.9	Electrical insulation		-
2.9.1	Properties of insulating materials	Insulation materials have adequate thermal and mechanical strength. Neither natural rubber, material containing asbestos nor hygroscopic materials are used as insulation.	P
2.9.2	Humidity conditioning	Performed for 48 h.	P
	Relative humidity (%), temperature (°C):	95%, 40°C	—
2.9.3	Grade of insulation	Insulation used in the various parts of the appliance are adequate for the application.	P
2.9.4	Separation from hazardous voltages		P

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Clause	Requirement + Test	Result - Remark	Verdict

	Method(s) used	Method 1	—
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2.10	Clearances, creepage distances and distances through insulation		-
2.10.1	General	Considered.	P
2.10.1.1	Frequency	Considered.	P
2.10.1.2	Pollution degrees	2	P
2.10.1.3	Reduced values for functional insulation	Considered.	P
2.10.1.4	Intervening unconnected conductive parts	Considered.	P
2.10.1.5	Insulation with varying dimensions		N/A
2.10.1.6	Special separation requirements		N/A
2.10.1.7	Insulation in circuits generating starting pulses		N/A
2.10.2	Determination of working voltage	Considered.	P
2.10.2.1	General	(see appended table)	P
2.10.2.2	RMS working voltage	(see appended table)	P
2.10.2.3	Peak working voltage	(see appended table)	P
2.10.3	Clearances		-
2.10.3.1	General		-
2.10.3.2	Mains transient voltages		P
	a) AC mains supply	Overvoltage category III; 4000V	P
	b) Earthed d.c. mains supplies		N/A
	c) Unearthed d.c. mains supplies		N/A
	d) Battery operation		N/A
2.10.3.3	Clearances in primary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.4	Clearances in secondary circuits	(see appended table 2.10.3 and 2.10.4)	P
2.10.3.5	Clearances in circuits having starting pulses	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.3.6	Transients from a.c. mains supply	4000V	P
2.10.3.7	Transients from d.c. mains supply		N/A
2.10.3.8	Transients from telecommunication networks and cable distribution systems		N/A
2.10.3.9	Measurement of transient voltage levels		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network :		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
2.10.4	Creepage distances		-
2.10.4.1	General		P
2.10.4.2	Material group and comparative tracking index		P
	CTI tests	Material group IIIb is assumed to be used	—
2.10.4.3	Minimum creepage distances	(see appended table 2.10.3 and 2.10.4)	P
2.10.5	Solid insulation		-
2.10.5.1	General		P
2.10.5.2	Distances through insulation	(see appended table 2.10.5 and 2.10.9)	P
2.10.5.3	Insulating compound as solid insulation		P
2.10.5.4	Semiconductor devices		N/A
2.10.5.5.	Cemented joints	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.5.6	Thin sheet material – General	(see appended table C.2 and 5.2)	N/A
2.10.5.7	Separable thin sheet material		N/A
	Number of layers (pcs)	(see appended table C.2 and 5.2)	—
2.10.5.8	Non-separable thin sheet material		N/A
2.10.5.9	Thin sheet material – standard test procedure		N/A
	Electric strength test	(see appended table 2.10.5 e C.2)	—
2.10.5.10	Thin sheet material – alternative test procedure		N/A
	Electric strength test	(see appended table 2.10.5)	—
2.10.5.11	Insulation in wound components		P
2.10.5.12	Wire in wound components		P
	Working voltage	Secondary wire on transformer T1 certified as separate part. (See Annex C)	P
	a) Basic insulation not under stress		N/A
	b) Basic, supplementary, reinforced insulation		N/A
	c) Compliance with Annex U		N/A
	Two wires in contact inside wound component; angle between 45° and 90°		N/A
2.10.5.13	Wire with solvent-based enamel in wound components		N/A
	Electric strength test	(see appended table 2.10.5)	—

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Clause	Requirement + Test	Result - Remark	Verdict

	Routine test		N/A
2.10.5.14	Additional insulation in wound components		N/A
	Working voltage		N/A
	- Basic insulation not under stress		N/A
	- Supplementary, reinforced insulation		N/A
2.10.6	Construction of printed boards		-
2.10.6.1	Uncoated printed boards	(see appended table 2.10.3 and 2.10.4)	P
2.10.6.2	Coated printed boards	(see appended table 2.10.3 and 2.10.4)	N/A
2.10.6.3	Insulation between conductors on the same inner surface of a printed board	(see appended table 2.10.3 and 2.10.4 and 2.10.5)	N/A
2.10.6.4	Insulation between conductors on different layers of a printed board		N/A
	Distance through insulation	(see appended table 2.10.5)	N/A
	Number of insulation layers (pcs)		N/A
2.10.7	Component external terminations	(see appended table 2.10.3 and 2.10.4)	P
2.10.8	Tests on coated printed boards and coated components		N/A
2.10.8.1	Sample preparation and preliminary inspection		N/A
2.10.8.2	Thermal conditioning		N/A
2.10.8.3	Electric strength test	(see appended table 5.2)	N/A
2.10.8.4	Abrasion resistance test		N/A
2.10.9	Thermal cycling		N/A
2.10.10	Test for Pollution Degree 1 environment and insulating compound		N/A
2.10.11	Tests for semiconductor devices and cemented joints		N/A
2.10.12	Enclosed and sealed parts		N/A

3	WIRING, CONNECTIONS AND SUPPLY		-
3.1	General		-
3.1.1	Current rating and overcurrent protection	Internal wiring gauge is suitable for current intended to be carried.	P
3.1.2	Protection against mechanical damage	The wireways are smooth and free of sharp edges.	P

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Clause	Requirement + Test	Result - Remark	Verdict
3.1.3	Securing of internal wiring	The internal wirings are mechanically secured in a manner to prevent undue displacement or damaging.	P
3.1.4	Insulation of conductors	Insulation of all internal wiring is suitable for the application. (see appended table 5.2)	P
3.1.5	Beads and ceramic insulators	Not present.	N/A
3.1.6	Screws for electrical contact pressure		P
3.1.7	Insulating materials in electrical connections	Contact pressure transmitted only through metal parts.	P
3.1.8	Self-tapping and spaced thread screws	Not present.	N/A
3.1.9	Termination of conductors		P
	10 N pull test		P
3.1.10	Sleeving on wiring	On T1.	P

3.2	Connection to a mains supply		-
3.2.1	Means of connection		-
3.2.1.1	Connection to an a.c. mains supply	Terminals for permanent connection to the supply.	P
3.2.1.2	Connection to a d.c. mains supply		N/A
3.2.2	Multiple supply connections	Only one connection to the mains.	N/A
3.2.3	Permanently connected equipment		P
	Number of conductors, diameter of cable and conduits (mm)	Terminals as specified in 3.3 and table 1.5.1.	—
3.2.4	Appliance inlets		N/A
3.2.5	Power supply cords		N/A
3.2.5.1	AC power supply cords		N/A
	Type		—
	Rated current (A), cross-sectional area (mm ²), AWG		—
3.2.5.2	DC power supply cords		N/A
3.2.6	Cord anchorages and strain relief		N/A
	Mass of equipment (kg), pull (N)		—
	Longitudinal displacement (mm)		—
3.2.7	Protection against mechanical damage	See Conditions of acceptability.	N/A
3.2.8	Cord guards		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

	Diameter or minor dimension D (mm); test mass (g):		—
	Radius of curvature of cord (mm)		—
3.2.9	Supply wiring space		P

3.3	Wiring terminals for connection of external conductors		-
3.3.1	Wiring terminals	(see appended table 1.5.1)	P
3.3.2	Connection of non-detachable power supply cords		N/A
3.3.3	Screw terminals	(see appended table 1.5.1)	P
3.3.4	Conductor sizes to be connected	Internal conductors are suitable for the application.	N/A
	Rated current (A), cord/cable type, cross-sectional area (mm ²)	Up to 4mm ²	—
3.3.5	Wiring terminal sizes	Terminals are suitable for the application.	P
	Rated current (A), type, nominal thread diameter (mm)	(see appended table 1.5.1)	—
3.3.6	Wiring terminal design	(see appended table 1.5.1)	P
3.3.7	Grouping of wiring terminals		P
3.3.8	Stranded wire		P

3.4	Disconnection from the mains supply		-
3.4.1	General requirement	The building installation provides to short-circuit breaker protection.	P
3.4.2	Disconnect devices	See installation sheet .	P
3.4.3	Permanently connected equipment	See installation sheet .	P
3.4.4	Parts which remain energized		N/A
3.4.5	Switches in flexible cords		N/A
3.4.6	Number of poles - single-phase and d.c. equipment		N/A
3.4.7	Number of poles - three-phase equipment		N/A
3.4.8	Switches as disconnect devices		N/A
3.4.9	Plugs as disconnect devices		N/A
3.4.10	Interconnected equipment		N/A
3.4.11	Multiple power sources	Only one power supply.	N/A

3.5	Interconnection of equipment		-
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Clause	Requirement + Test	Result - Remark	Verdict

3.5.1	General requirements		P
3.5.2	Types of interconnection circuits	Connection for SELV.	P
3.5.3	ELV circuits as interconnection circuits		N/A
3.5.4	Data ports for additional equipment		N/A

4	PHYSICAL REQUIREMENTS		-
4.1	Stability		N/A
	Angle of 10°	The equipment is designed for flush mounting.	N/A
	Test force (N)		N/A

4.2	Mechanical strength		
4.2.1	General	USB power unit is an EUT for household and similar fixed-electrical installations, therefore it was applied the paragraph 20.1 Mechanical Strength of the IEC 60669-1:1998 (Third edition) + A1:1999 + A2:2006. (see appended table 20.1 TABLE: impact test)	P
	Rack-mounted equipment.	(see Annex DD)	N/A
4.2.2	Steady force test, 10 N	(see appended table)	N/A
4.2.3	Steady force test, 30 N	(see appended table)	N/A
4.2.4	Steady force test, 250 N	(see appended table)	N/A
4.2.5	Impact test		-
	Fall test	(see appended table)	N/A
	Swing test	(see appended table)	N/A
4.2.6	Drop test; height (mm)	No hand-held equipment.	N/A
4.2.7	Stress relief test	70°C, 7h	P
4.2.8	Cathode ray tubes	Not provided.	N/A
	Picture tube separately certified	(see separate test report or attached certificate)	N/A
4.2.9	High pressure lamps		N/A
4.2.10	Wall or ceiling mounted equipment; force (N)	The equipment is designed for flush mounting.	N/A

4.3	Design and construction		-
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Clause	Requirement + Test	Result - Remark	Verdict
4.3.1	Edges and corners	Edges and corners of the appliance enclosure are adequately rounded and smoothed.	P
4.3.2	Handles and manual controls; force (N)		N/A
4.3.3	Adjustable controls		N/A
4.3.4	Securing of parts	All hazardous parts are fixed to retain in position in the event of termination failure.	P
4.3.5	Connection by plugs and sockets		N/A
4.3.6	Direct plug-in equipment		N/A
	Torque		—
	Compliance with the relevant mains plug standard		N/A
4.3.7	Heating elements in earthed equipment		N/A
4.3.8	Batteries		N/A
	- Overcharging of a rechargeable battery	(see appended tables 4.3.8)	N/A
	- Unintentional charging of a non-rechargeable battery		N/A
	- Reverse charging of a rechargeable battery		N/A
	- Excessive discharging rate for any battery	(see appended tables 4.3.8)	N/A
4.3.9	Oil and grease	Insulation is not exposed to oil or grease.	N/A
4.3.10	Dust, powders, liquids and gases		N/A
4.3.11	Containers for liquids or gases	The equipment does not contain liquids or gases.	N/A
4.3.12	Flammable liquids	Not present.	N/A
	Quantity of liquid (l)		N/A
	Flash point (°C)		N/A
4.3.13	Radiation		-
4.3.13.1	General		N/A
4.3.13.2	Ionizing radiation		N/A
	Measured radiation (pA/kg)		—
	Measured high-voltage (kV)		—
	Measured focus voltage (kV)		—
	CRT markings		—
4.3.13.3	Effect of ultraviolet (UV) radiation on materials		N/A
	Part, property, retention after test, flammability classification		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

4.3.13.4	Human exposure to ultraviolet (UV) radiation		N/A
4.3.13.5	Lasers (including laser diodes) and LEDs		N/A
4.3.13.5.1	Lasers (including laser diodes)	(see separate test report of IEC/EN 60825-1 / IEC/EN 60825-2)	N/A
	Laser class		—
4.3.13.5.2	Light emitting diodes (LEDs)		
4.3.13.6	Other types		N/A

4.4	Protection against hazardous moving parts		N/A
4.4.1	General		N/A
4.4.2	Protection in operator access areas		N/A
	Household and home/office document/media shredders	(see Annex EE)	N/A
4.4.3	Protection in restricted access locations		N/A
4.4.4	Protection in service access areas		N/A
4.4.5	Protection against moving fan blades		N/A
4.4.5.1	General		N/A
	Not considered to cause pain or injury. a)		N/A
	Is considered to cause pain, not injury. b)		N/A
	Considered to cause injury. c)		N/A
4.4.5.2	Protection for users		N/A
	Use of symbol or warning		N/A
4.4.5.3	Protection for service persons		N/A
	Use of symbol or warning		N/A

4.5	Thermal requirements		-
4.5.1	General	Considered.	P
4.5.2	Temperature tests	Considered.	P
	Normal load condition per Annex L	L7	—
4.5.3	Temperature limits for materials	(see appended table 4.5)	P
4.5.4	Touch temperature limits	(see appended table 4.5)	P
4.5.5	Resistance to abnormal heat	(see appended table 4.5.5)	P

4.6	Openings in enclosures		-
4.6.1	Top and side openings		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Dimensions (mm)	No openings are present in the EUT when it is installed. See also "Conditions of acceptability".	—
4.6.2	Bottoms of fire enclosures	See above. See also "Conditions of acceptability".	P
	Construction of the bottom, dimensions (mm) ..		—
4.6.3	Doors or covers in fire enclosures	Front door don't allow to operator access area. See above and "Conditions of acceptability".	P
4.6.4	Openings in transportable equipment		N/A
4.6.4.1	Constructional design measures		N/A
	Dimensions (mm)		—
4.6.4.2	Evaluation measures for larger openings		N/A
4.6.4.3	Use of metallized parts		N/A
4.6.5	Adhesives for constructional purposes		N/A
	Conditioning temperature (°C), time (weeks).....		—
4.7	Resistance to fire		-
4.7.1	Reducing the risk of ignition and spread of flame	USB power unit is an EUT for household and similar fixed-electrical installations, therefore it was applied the paragraph 24.1.1 b) Glow-wire test of the IEC 60669-1:1998 (Third edition) + A1:1999 + A2:2006. (see appended table 4.7 and 24.1.1)	P
	Method 1, selection and application of components wiring and materials	(see appended table 4.7)	P
	Method 2, application of all of simulated fault condition tests	(see appended table 5.3)	N/A
4.7.2	Conditions for a fire enclosure		N/A
4.7.2.1	Parts requiring a fire enclosure		N/A
4.7.2.2	Parts not requiring a fire enclosure		N/A
4.7.3	Materials		-
4.7.3.1	General		N/A
4.7.3.2	Materials for fire enclosures	(see appended table 4.7)	N/A
4.7.3.3	Materials for components and other parts outside fire enclosures	See table 4.7.	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
4.7.3.4	Materials for components and other parts inside fire enclosures		N/A
4.7.3.5	Materials for air filter assemblies		N/A
4.7.3.6	Materials used in high-voltage components		N/A

5	ELECTRICAL REQUIREMENTS AND SIMULATED ABNORMAL CONDITIONS		-
5.1	Touch current and protective conductor current		-
5.1.1	General	(see appended Table 5.1)	P
5.1.2	Configuration of equipment under test (EUT)		-
5.1.2.1	Single connection to an a.c. mains supply		P
5.1.2.2	Redundant multiple connections to an a.c. mains supply		N/A
5.1.2.3	Simultaneous multiple connections to an a.c. mains supply		N/A
5.1.3	Test circuit	The appliance was tested with the circuit in fig. 5.A of this standard.	P
5.1.4	Application of measuring instrument		N/A
5.1.5	Test procedure		P
5.1.6	Test measurements	Circuit D.1 used.	P
	Supply voltage (V)	(see appended table 5.1)	—
	Measured touch current (mA)	(see appended table 5.1)	—
	Max. allowed touch current (mA)	(see appended table 5.1)	—
	Measured protective conductor current (mA)	(see appended table 5.1)	—
	Max. allowed protective conductor current (mA) ..	(see appended table 5.1)	—
5.1.7	Equipment with touch current exceeding 3,5 mA	(see appended table 5.1)	N/A
5.1.7.1	General		N/A
5.1.7.2	Simultaneous multiple connections to the supply		N/A
5.1.8	Touch currents to telecommunication networks and cable distribution systems and from telecommunication networks		N/A
5.1.8.1	Limitation of the touch current to a telecommunication network or to a cable distribution system		N/A
	Supply voltage (V)	(see appended table 5.1)	—
	Measured touch current (mA)	(see appended table 5.1)	—
	Max. allowed touch current (mA)	(see appended table 5.1)	—

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Clause	Requirement + Test	Result - Remark	Verdict

5.1.8.2	Summation of touch currents from telecommunication networks		N/A
	a) EUT with earthed telecommunication ports :		N/A
	b) EUT whose telecommunication ports have no reference to protective earth		N/A

5.2	Electric strength		-
5.2.1	General	(see appended table 5.2)	P
5.2.2	Test procedure	Table 5B.	P

5.3	Abnormal operating and fault conditions		
5.3.1	Protection against overload and abnormal operation	(see appended table 5.3)	P
5.3.2	Motors	(see appended Annex B)	N/A
5.3.3	Transformers	(see appended Annex C and table 5.3)	P
5.3.4	Functional insulation		P
5.3.5	Electromechanical components		N/A
5.3.6	Audio amplifiers in ITE	See separate test report IEC/EN 60065	N/A
5.3.7	Simulation of faults	(see appended table 5.3.7)	P
5.3.8	Unattended equipment		N/A
5.3.9	Compliance criteria for abnormal operating and fault conditions		-
5.3.9.1	During the tests	No fire or molten metal or deformation.	P
5.3.9.2	After the tests	See table 5.2.	P

6	CONNECTION TO TELECOMMUNICATION NETWORKS		-
6.1	Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment		-
6.1.1	Protection from hazardous voltages		N/A
6.1.2	Separation of the telecommunication network from earth		N/A
6.1.2.1	Requirements	(see appended table 5.2)	N/A
	Supply voltage (V)		—
	Current in the test circuit (mA)		—
6.1.2.2	Exclusions		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

6.2	Protection of equipment users from overvoltages on telecommunication networks		
6.2.1	Separation requirements		N/A
6.2.2	Electric strength test procedure		N/A
6.2.2.1	Impulse test		N/A
6.2.2.2	Steady-state test	(see appended table 5.2)	N/A
6.2.2.3	Compliance criteria		N/A

6.3	Protection of the telecommunication wiring system from overheating		N/A
	Max. output current (A)		—
	Current limiting method		—

7	CONNECTION TO CABLE DISTRIBUTION SYSTEMS		-
7.1	General		N/A
7.2	Protection of cable distribution system service persons, and users of other equipment connected to the system, from hazardous voltages in the equipment		N/A
7.3	Protection of equipment users from overvoltages on the cable distribution system		N/A
7.4	Insulation between primary circuits and cable distribution systems		N/A
7.4.1	General		N/A
7.4.2	Voltage surge test	(see appended table 5.2)	N/A
7.4.3	Impulse test	(see appended table 5.2)	N/A

A	ANNEX A, TESTS FOR RESISTANCE TO HEAT AND FIRE		-
A.1	Flammability test for fire enclosures of movable equipment having a total mass exceeding 18 kg, and of stationary equipment (see 4.7.3.2)		N/A
A.1.1	Samples		—
	Wall thickness (mm).....		—
A.1.2	Conditioning of samples; temperature (°C)		N/A
A.1.3	Mounting of samples		N/A
A.1.4	Test flame (see IEC 60695-11-3)		N/A
	Flame A, B, C or D		—
A.1.5	Test procedure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

A.1.6	Compliance criteria		N/A
	Sample 1 burning time (s).....:		—
	Sample 2 burning time (s).....:		—
	Sample 3 burning time (s).....:		—
A.2	Flammability test for fire enclosures of movable equipment having a total mass not exceeding 18 kg, and for material and components located inside fire enclosures (see 4.7.3.2 and 4.7.3.4)		-
A.2.1	Samples, material		—
	Wall thickness (mm).....:		—
A.2.2	Conditioning of samples; temperature (°C)		N/A
A.2.3	Mounting of samples		N/A
A.2.4	Test flame (see IEC 60695-11-4)		N/A
	Flame A, B or C		—
A.2.5	Test procedure		N/A
A.2.6	Compliance criteria		N/A
	Sample 1 burning time (s).....:		—
	Sample 2 burning time (s).....:		—
	Sample 3 burning time (s).....:		—
A.2.7	Alternative test acc. to IEC 60695-11-5, cl. 5 and 9		N/A
	Sample 1 burning time (s).....:		—
	Sample 2 burning time (s).....:		—
	Sample 3 burning time (s).....:		—
A.3	Hot flaming oil test (see 4.6.2)		N/A
A.3.1	Mounting of samples		N/A
A.3.2	Test procedure		N/A
A.3.3	Compliance criterion		N/A

B	ANNEX B, MOTOR TESTS UNDER ABNORMAL CONDITIONS (see 4.7.2.2 and 5.3.2)		-
B.1	General requirements		N/A
	Position		—
	Manufacturer		—
	Type		—
	Rated values		—
B.2	Test conditions		N/A
B.3	Maximum temperatures	(see appended table 5.3)	N/A

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Clause	Requirement + Test	Result - Remark	Verdict

B.4	Running overload test	(see appended table 5.3)	N/A
B.5	Locked-rotor overload test		N/A
	Test duration (days)		—
	Electric strength test: test voltage (V)		—
B.6	Running overload test for d.c. motors in secondary circuits		N/A
B.6.1	General		N/A
B.6.2	Test procedure		N/A
B.6.3	Alternative test procedure		N/A
B.6.4	Electric strength test; test voltage (V)		N/A
B.7	Locked-rotor overload test for d.c. motors in secondary circuits		N/A
B.7.1	General		N/A
B.7.2	Test procedure		N/A
B.7.3	Alternative test procedure		N/A
B.7.4	Electric strength test; test voltage (V)		N/A
B.8	Test for motors with capacitors	(see appended table 5.3)	N/A
B.9	Test for three-phase motors	(see appended table 5.3)	N/A
B.10	Test for series motors		N/A
	Operating voltage (V)		—

C	ANNEX C, TRANSFORMERS (see 1.5.4 and 5.3.3)		-
	Position	Mains transformer T2	—
	Manufacturer	KY	—
	Type	EPC19	—
	Rated values	Class F considered	—
	Method of protection	primary fuse	—
C.1	Overload test	(see appended table 5.3)	P
C.2	Insulation	(see appended tables 5.2 and 2.10.3, 2.10.4, 2.10.5)	P

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Clause	Requirement + Test	Result - Remark	Verdict

Bobbin: Chang Chun Plastics Co Ltd, type T375HF, color BK, UL 94V-0, RTI Elect. 150°C, IEC Ball Pressure IEC 60695-10-2 190°C, UL (E59481) Secondary wire: Suzhou Yusheng Electronic Co Ltd, type TIW-F+, Single- and Multi-layer Insulated Winding Wire - Component, rated 155°C (Class F), UL (E332529) Primary wire: Pacific Electric Wire & Cable Co Ltd, Material Designation DDF-NY, ANSI type MW 80-C, rated 155°C, UL (E84081) Tape: Jingjiang Yahua Pressure Sensitive Glue Co Ltd, Cat. No. PF* (d)(g), Flame Retardant, color Amber, rated 180°C (Class H), UL (E165111) Tube: Shenzhen Woer Heat-Shrinkable Material Co Ltd, Cat. No. WF, colors natural,, Sleeving, Max. temp. 200°C, UL Flame Class VW-1 UL (E203950) Varnish: Elantas Electrical Insulation Elantas Pdg Inc, type V1630, Twisted Pair Temp 155°C, UL(E75225)			
	Protection from displacement of windings	Bobbin, tape	P

D	ANNEX D, MEASURING INSTRUMENTS FOR TOUCH-CURRENT TESTS (see 5.1.4)		-
D.1	Measuring instrument		P
D.2	Alternative measuring instrument		N/A

E	ANNEX E, TEMPERATURE RISE OF A WINDING (see 1.4.13)		N/A
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F	ANNEX F, MEASUREMENT OF CLEARANCES AND CREEPAGE DISTANCES (see 2.10 and Annex G)		P
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G	ANNEX G, ALTERNATIVE METHOD FOR DETERMINING MINIMUM CLEARANCES		-
G.1	Clearances		-
G.1.1	General	Considered	P
G.1.2	Summary of the procedure for determining minimum clearances	Considered	P
G.2	Determination of mains transient voltage (V)		-
G.2.1	AC mains supply	Cat. III, 4000V	P
G.2.2	Earthed d.c. mains supplies		N/A
G.2.3	Unearthed d.c. mains supplies		N/A
G.2.4	Battery operation		N/A
G.3	Determination of telecommunication network transient voltage (V)		N/A
G.4	Determination of required withstand voltage (V)		-
G.4.1	Mains transients and internal repetitive peaks	4552V	P
G.4.2	Transients from telecommunication networks		N/A
G.4.3	Combination of transients		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

G.4.4	Transients from cable distribution systems		N/A
G.5	Measurement of transient voltages (V)		N/A
	a) Transients from a mains supply		N/A
	For an a.c. mains supply		N/A
	For a d.c. mains supply		N/A
	b) Transients from a telecommunication network		N/A
G.6	Determination of minimum clearances	(see appended table 2.10.3 and 2.10.4)	P

H	ANNEX H, IONIZING RADIATION (see 4.3.13)		N/A
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J	ANNEX J, TABLE OF ELECTROCHEMICAL POTENTIALS (see 2.6.5.6)		N/A
	Metal(s) used		—

K	ANNEX K, THERMAL CONTROLS (see 1.5.3 and 5.3.8)		-
K.1	Making and breaking capacity		N/A
K.2	Thermostat reliability; operating voltage (V)		N/A
K.3	Thermostat endurance test; operating voltage (V)		N/A
K.4	Temperature limiter endurance; operating voltage (V)		N/A
K.5	Thermal cut-out reliability		N/A
K.6	Stability of operation	(see appended table 5.3)	N/A

L	ANNEX L, NORMAL LOAD CONDITIONS FOR SOME TYPES OF ELECTRICAL BUSINESS EQUIPMENT (see 1.2.2.1 and 4.5.2)		-
L.1	Typewriters		N/A
L.2	Adding machines and cash registers		N/A
L.3	Erasers		N/A
L.4	Pencil sharpeners		N/A
L.5	Duplicators and copy machines		N/A
L.6	Motor-operated files		N/A
L.7	Other business equipment	USB output loaded with 2.4A.	P

M	ANNEX M, CRITERIA FOR TELEPHONE RINGING SIGNALS (see 2.3.1)		-
M.1	Introduction		N/A
M.2	Method A		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

M.3	Method B		N/A
M.3.1	Ringling signal		N/A
M.3.1.1	Frequency (Hz)		—
M.3.1.2	Voltage (V)		—
M.3.1.3	Cadence; time (s), voltage (V)		—
M.3.1.4	Single fault current (mA)		—
M.3.2	Tripping device and monitoring voltage		N/A
M.3.2.1	Conditions for use of a tripping device or a monitoring voltage		N/A
M.3.2.2	Tripping device		N/A
M.3.2.3	Monitoring voltage (V)		N/A

N	ANNEX N, IMPULSE TEST GENERATORS (see 1.5.7.2, 1.5.7.3, 2.10.3.9, 6.2.2.1, 7.3.2, 7.4.3 and Clause G.5)		-
N.1	ITU-T impulse test generators		N/A
N.2	IEC 60065 impulse test generator		N/A

P	ANNEX P, NORMATIVE REFERENCES		—
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Q	ANNEX Q, Voltage dependent resistors (VDRs) (see 1.5.9.1)		-
	- Preferred climatic categories	VDR certified as separate parts. See Table 1.5.1.	N/A
	- Maximum continuous voltage		N/A
	- Combination pulse current		N/A
	Body of the VDR Test according to IEC60695-11-5.....		N/A
	Body of the VDR. Flammability class of material (min V-1).....		N/A

R	ANNEX R, EXAMPLES OF REQUIREMENTS FOR QUALITY CONTROL PROGRAMMES		-
R.1	Minimum separation distances for unpopulated coated printed boards (see 2.10.6.2)		N/A
R.2	Reduced clearances (see 2.10.3)		N/A

S	ANNEX S, PROCEDURE FOR IMPULSE TESTING (see 6.2.2.3)		-
S.1	Test equipment		N/A
S.2	Test procedure		N/A

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Clause	Requirement + Test	Result - Remark	Verdict

S.3	Examples of waveforms during impulse testing		N/A
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T	ANNEX T, GUIDANCE ON PROTECTION AGAINST INGRESS OF WATER (see 1.1.2)		N/A
			—

U	ANNEX U, INSULATED WINDING WIRES FOR USE WITHOUT INTERLEAVED INSULATION (see 2.10.5.4)		N/A
			—

V	ANNEX V, AC POWER DISTRIBUTION SYSTEMS (see 1.6.1)		-
V.1	Introduction		P
V.2	TN power distribution systems		N/A

W	ANNEX W, SUMMATION OF TOUCH CURRENTS		-
W.1	Touch current from electronic circuits		N/A
W.1.1	Floating circuits		N/A
W.1.2	Earthed circuits		N/A
W.2	Interconnection of several equipments		N/A
W.2.1	Isolation		N/A
W.2.2	Common return, isolated from earth		N/A
W.2.3	Common return, connected to protective earth		N/A
X	ANNEX X, MAXIMUM HEATING EFFECT IN TRANSFORMER TESTS (see clause C.1)		
X.1	Determination of maximum input current		N/A
X.2	Overload test procedure		N/A

Y	ANNEX Y, ULTRAVIOLET LIGHT CONDITIONING TEST (see 4.3.13.3)		-
Y.1	Test apparatus		N/A
Y.2	Mounting of test samples		N/A
Y.3	Carbon-arc light-exposure apparatus		N/A
Y.4	Xenon-arc light exposure apparatus		N/A

Z	ANNEX Z, OVERVOLTAGE CATEGORIES (see 2.10.3.2 and Clause G.2)		N/A
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AA	ANNEX AA, MANDREL TEST (see 2.10.5.8)		N/A
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Clause	Requirement + Test	Result - Remark	Verdict

BB	ANNEX BB, CHANGES IN THE SECOND EDITION	—
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CC	ANNEX CC, Evaluation of integrated circuit (IC) current limiters	-
CC.1	General	N/A
CC.2	Test program 1.....:	N/A
CC.3	Test program 2.....:	N/A
CC.4	Test program 3.....:	N/A
CC.5	Compliance.....:	N/A

DD	ANNEX DD, Requirements for the mounting means of rack-mounted equipment	-
DD.1	General	N/A
DD.2	Mechanical strength test, variable N.....:	N/A
DD.3	Mechanical strength test, 250N, including end stops.....:	N/A
DD.4	Compliance.....:	N/A

EE	ANNEX EE, Household and home/office document/media shredders	-
EE.1	General	N/A
EE.2	Markings and instructions	N/A
	Use of markings or symbols.....:	N/A
	Information of user instructions, maintenance and/or servicing instructions.....:	N/A
EE.3	Inadvertent reactivation test.....:	N/A
EE.4	Disconnection of power to hazardous moving parts:	N/A
	Use of markings or symbols.....:	N/A
EE.5	Protection against hazardous moving parts	N/A
	Test with test finger (Figure 2A)	N/A
	Test with wedge probe (Figure EE1 and EE2)	N/A

1.5.1		TABLE: List of critical components				
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard (Edition / year)	Mark(s) of conformity ¹⁾	
Mains terminal block	Ningbo Ulo Electronics Co., Ltd	ULO-TB25	320V, 20A Oper. Temp. - 40°C to 115°C material PA66, UL94V-0, Wire range 0.2- 4mm2	EN 60998-2- 1:2004, EN 60998-1:2004	 No.B15 0291061002	
Mains fuse (F1)	Aem Components (Suzhou) Co Ltd	MF2410F1	F1A ; 250V, 6.1 x2.16x2.49 mm. (Supplemental micro fuses)	EN 60127-1 EN 60127-4 UL248-14 CSA C22.2 no. 248.14	 , 	
Varistor (VR1)	Ceramate Techn. Co., Ltd.	10D471K	300Vac	IEC 61051- 1:2007, IEC 61051- 2:1991+Am1:200 9, 61051-2- 2:1991, IEC 60950-1:2013 Annex Q		
Transformer (T2)	 Ningbo Beilun Ky Electronics Co Ltd	EPC19	Switching transformer Class B	/	Tested in appliance	
Y1 capacitors (Y10)	Jyh Chung Electronic Co Ltd	JD Series	2200 pF, 400V, Y1	IEC 60384- 14(ed.4)	 ,	
High-Power Off- Line Switcher IC1	Power Integrations	SC1162K2	90-264Vac, 10W	/	/	
Supplementary information: 1) Provided evidence ensures the agreed level of compliance. See OD-CB2039.						

1.5.1	TABLE: Opto Electronic Devices		
Manufacturer	/	/	
Type	/	/	
Separately tested	/	/	
Bridging insulation.....	/	/	
External creepage distance	/	/	
Internal creepage distance	/	/	
Distance through insulation	/	/	
Tested under the following conditions	-	/	
Input	-	-	
Output	-	-	
supplementary information :			
/			

1.6.2	TABLE: Electrical data (in normal conditions)					
U (V)	I (mA)	Irated (A)	P (W)	Fuse #	Ifuse (A)	Condition/status
100	294.6	0.3	/	Mains	2	According to 1.4 “General conditions for tests”. USB output: 2.4A
230	168.5	0.3	/	Mains	2	
Supplementary information:						
Environmental conditions: relative humidity 64%; atmospheric pressure 997mbar, temperature 26°C.						

2.5	TABLE: Limited power sources					
Circuit output tested:						
Note: Measured Uoc (V) with all load circuits disconnected:						
Components	Fault	Uoc (V)	I _{sc} (A)		VA	
			Meas.	Limit	Meas.	Limit
USB output	OI	4.88	2.58	8	10.3	100
USB output	Sc	4.88	1.18	8	6.76	100
supplementary information:						
Sc=Short circuit, Oc=Open circuit, OI= Over load						
Max value performed to 90V.						
Environmental conditions: relative humidity 29%; atmospheric pressure 1001mbar, temperature 22°C.						

2.6.3.4	TABLE: resistance of earthing conductors and their terminations			
Accessible conductive part	Test current (A)	Voltage drop (V)	Calculated Resistance (Ω)	
/	/	/	/	
Supplementary information:				

2.10.2	Table: working voltage measurement			
Location	RMS voltage (V)	Peak voltage (V)	Comments	
-DC to drain (B1)	-	552pk	-	
-earth to drain (A3)	241	528pk	-	
supplementary information:				
Supplementary information: / Environmental conditions: relative humidity 39%; atmospheric pressure 1003mbar, temperature 24°C.				

2.10.3 and 2.10.4		TABLE: Clearance and creepage distance measurements					
Clearance (cl) and creepage distance (cr) at/of/between:		U peak (V)	U r.m.s. (V)	Required cl (mm)	cl (mm)	Required cr (mm)	cr (mm)
Functional:							
Between opposite polarity on mains connector mounted on PWB.		324	230	3	4(*)	3	4(*)
Between opposite polarity tracks on connector PWB (before the fuse).		324	230	3	3.2	3	3.2
Between opposite polarity tracks on main PWB (before the fuse).		324	230	3	4.1	3	4.1
Reinforced:							
Between primary to secondary components (C2 and USB port). (transformer side PWB)		552	230	6.6	8	6.6	8
Between primary to secondary tracks on PWB (soldering side) (pin di T1 and secondary track)		552	230	6.6	6.8	6.6	7.3
Between primary to secondary tracks on PWB (soldering side) (C5 and R9)		552	230	6.6	6.8	6.6	15.3
Between primary to secondary tracks on PWB (R11 and C2 track) (soldering side)		552	230	6.6	6.7	6.6	6.7
Between primary to secondary on Y10, capacitor Y1 (external)		552	230	6.6	9	6.6	12
Supplementary information: Environmental conditions: relative humidity 28%; atmospheric pressure 1002mbar, temperature 23°C. (*)measurement performed with 2.5mm wire engaged and screwed. Clearance and creepage distance for overvoltage category III/230V, calculated in compliance with Annex G, Table G.2. Groove between primary and secondary on PCB: 1.4mm.							

2.10.5	TABLE: Distance through insulation measurements					
Distance through insulation (DTI) at/of:		U peak (V)	U rms (V)	Test voltage (V)	Required DTI (mm)	DTI (mm)
Wire on secondary windings of transformer T1		552	230	4417	0.4	(*)
Supplementary information: Environmental conditions: relative humidity 29%; atmospheric pressure 1013mbar, temperature 23°C. (*) Triple insulated wire certified as separate part. (see table 1.5.1 and Annex C)						

4.2.3	TABLE: steady force, 30 N		
Steady force applied to		Results	
/		/	
Supplementary information:			

4.2.4	TABLE: steady force, 250 N		
Steady force applied to		Results	
/		/	
Supplementary information:			

4.2.5	TABLE: impact test		
Steady force applied to		Results	
/		/	
Swing applied to		Results	
/		/	
Supplementary information:			

20.1 IEC 60669-1:1998 (Third edition) + A1:1999 + A2:2006			TABLE: impact test
Part of enclosure tested per table 18 (A, B, C, D)	Blows per part	Height of fall (mm)	Comments
A (frontal cover)	5	100	no damage
supplementary information: Environmental conditions: relative humidity 46%; atmospheric pressure 995mbar, temperature 24°C.			

4.3.8	TABLE: Batteries								/
The tests of 4.3.8 are applicable only when appropriate battery data is not available					/			/	
Is it possible to install the battery in a reverse polarity position?					/			/	
	Non-rechargeable batteries			Rechargeable batteries					
	Discharging		Un-intentional charging	Charging		Discharging		Reversed charging	
	Meas. current	Manuf. Specs.		Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.	Meas. current	Manuf. Specs.
Max. current during normal condition	/	/	/	/	/	/	/	/	/
Max. current during fault condition	/	/	/	/	/	/	/	/	/
Test results:									Verdict
- Chemical leaks					/				/
- Explosion of the battery					/				/
- Emission of flame or expulsion of molten metal					/				/
- Electric strength tests of equipment after completion of tests					/				/
Supplementary information: /									

MARKINGS AND INSTRUCTIONS (1.7.13)

Location of replaceable battery	/
Language(s)	/
Close to the battery	/
In the servicing instructions	/
In the operating instructions	/

4.5	TABLE: Thermal requirements						
	Supply voltage (V)	90	253	/	/	/	—
	Maximum measured temperature T of part/at.....:	T (°C)					Allowed T _{max} (°C)
	1) PCB adjacent diode bridge	90	74	/	/	/	110
	2) Transformer T1 (windings)	99	97	/	/	/	110(*) (^)
	3) PCB adjacent IC1	97	90	/	/	/	110
	4) Mains connector	72	62	/	/	/	105
	5) Front enclosure	43	40	/	/	/	75
Supplementary information: Limits for an ambient temperature of 45°C Test conditions: USB loaded with 2.4A, EUT installed in a mounting boxes for masonry walls. (*) Class F considered. (^) Temperature measured with thermocouples. Environmental conditions: relative humidity 64%; atmospheric pressure 997mbar, temperature 26°C.							
Temperature T of winding:		t ₁ (°C)	R ₁ (Ω)	t ₂ (°C)	R ₂ (Ω)	T (°C)	Allowed T _{max} (°C)
/		/	/	/	/	/	/

4.5.5	TABLE: Ball pressure test of thermoplastic parts			
	Allowed impression diameter (mm) :	≤ 2 mm		—
Part		Test temperature (°C)	Impression diameter (mm)	
Mains terminal block		125	1.2	
Coil former (T1)		125	0.5	
Supplementary information:				
Environmental conditions: relative humidity 29%; atmospheric pressure 1013mbar, temperature 23°C.				

4.7		TABLE: Resistance to fire				
Part	Manufacturer of material	Type of material	Thickness (mm)	Flammability class	Evidence	
Bobbin (T1)	See annex C	See annex C	See annex C	See annex C.	See annex C	
Mains terminal block	See table 1.5.1	See table 1.5.1	See table 1.5.1	See table 1.5.1	See table 1.5.1	
Plastic material for PCB	Goldenmax International Technology Ltd	GDM-R1 (FR-4.0)	1.2	UL94V-0 RTI elec. 130°C	UL(E224772)	
Front cover (for LIVINGLIGHT, MATIX, PLANA, ARKE', SYSTEM, AXOLUTE, CHORUS series)	Kingfa Sci & Tech Co Ltd	JH820, Polycarbonate (PC), Color ALL,	1.6	UL94V-2, Glow wire test 960°C	UL (E171666)	
Enclosure (for LIVINGLIGHT, MATIX, PLANA, ARKE', SYSTEM, AXOLUTE, CHORUS series)	Kingfa Sci & Tech Co Ltd	JH820, Polycarbonate (PC), Color ALL,	1.4	UL94V-2, Glow wire test 960°C	UL (E171666)	
Supplementary information: /						

24.1.1 IEC 60669-1:1998 (Third edition) + A1:1999 + A2:2006		TABLE: glow-wire test	
Part under test	Material designation / manufacturer	Test temperature (°C)	Remarks
Front cover (for LIVINGLIGHT, MATIX, PLANA, ARKE', SYSTEM, AXOLUTE, CHORUS series)	JH820, Polycarbonate (PC), Color ALL,	650	(*)
Enclosure (for LIVINGLIGHT, MATIX, PLANA, ARKE', SYSTEM, AXOLUTE, CHORUS series)	JH820, Polycarbonate (PC), Color ALL,	650	(*)
supplementary information: (*) Material certified as separate part, see Table 4.7 above.			

5.1	TABLE: touch current and protective conductor current					
Measurement From / To	Supply voltage/Freq V/Hz	Switch ON/OFF	Voltage measured (mV)	Leakage current (mA)	Allowed Leakage current (mA)	
Line L/N to metal foil wrapped around the enclosure	253-90/50-60	/	0.78	0.00156	0.25	
Line to SELV	253-90/50-60	/	48.8	0.0976	0.25	
Supplementary information: Environmental conditions: relative humidity 39%; atmospheric pressure 1003mbar, temperature 24°C.						

5.2	TABLE: Electric strength tests, impulse tests and voltage surge tests			-
Test voltage applied between:		Voltage shape (AC, DC, impulse, surge)	Test voltage (V)	Breakdown Yes / No
Reinforced:				
Primary to secondary (mains to USB port)		AC	4417	No
Primary to enclosure		AC	4417	No
Between terminals on Y10 capacitor CY1		AC	4417	No
Primary to secondary on transformer T1		AC	4417	No
Supplementary information:				
Environmental conditions: relative humidity 28%; atmospheric pressure 1002mbar, temperature 23°C.				

5.3		TABLE: Fault condition tests					
Component No.	Fault	Supply voltage (V)	Test time	Fuse #	Fuse current (A)	Observation	
USB output	S-c	90/253	1h	-	-	Isc 1.18A No Hazardous temperature. No Hazard.	
USB output	OI	90/253	3h	-	-	Iol 2.584A No Hazardous temperature. No Hazard.	
C1	S-c	90/253	/	-	-	Mains fuse blew immediately. No Hazard.	
C2	S-c	90/253	/	-	-	Mains fuse blew immediately. No Hazard.	
Diode bridge DB1	S-c	90/253	/	-	-	Mains fuse blew immediately. No Hazard.	
IC1	S-c (D-s)	90/253	/	-	-	Mains fuse burst immediately, presence of burns on PCB. No Hazard.	
D1	S-c	90/253	2h	-	-	The power supply attempts to reboot. No Hazard.	
D2	S-c	90/253	2h	-	-	The power supply attempts to reboot. No Hazard.	
D3	S-c	90/253	2h	-	-	The power supply attempts to reboot. No Hazard.	
Supplementary information:							
Environmental conditions: relative humidity 33%; atmospheric pressure 1013mbar, temperature 23°C.							

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to TMP/CTF stage 1 or WMT/CTF stage 2 procedure has been used.

Clause	Measurement / testing	Testing / measuring equipment / material used	IMQ Ref. Number
1.6 & 4.5 & 5.3.7	Electrical data & thermal requirements & Simulation of faults	Yokogawa, WT 210	S04481
1.7.11	Durability	Petroleum spirit	-
2.1.1.1	Access To Hazardous Voltage Circuit Wiring	ICAM,	C00601
2.1.1.4	Access To Hazardous Voltage Circuit Wiring	ICAM,	C00599
2.2 & 5.3.7 & 2.5	SELV circuits & Simulation of faults & Limited power sources	Fluke, 45-15	S01861
2.9.2	Humidity conditioning	ACS	P00247
2.10.3 & 2.10.4	Clearance And Creepage Distance	Mauser, F/05	S00947
4.5 & 5.3.7	Thermal requirements & Simulation of faults	Hybrid recorder Yokogawa, 3081-21	S00590
5.1	touch current and protective conductor current	Measuring network	P03017
5.2	Electric Strength Tests And Impulse Tests	SCHLEICH, GLP2-e	P02788
4.5 & 5.3.7 & 4.5.5	Thermal requirements & Simulation of faults	Tersid, type T	0-150 °C
5.1 & 2.10.2	touch current & working voltage	Yokogawa, DLM2034	S05406

Clause	Measurement / testing	Testing / measuring equipment / material used	IMQ Ref. Number
4.5.5	Ball pressure test of thermoplastic parts	Oven Galli, 790	P00316
2.10.3 & 2.10.4	Clearance And Creepage Distance Measurements	Monocular, MITUTOYO, 183-131	S05695
2.10.3 & 2.10.4	Clearance And Creepage Distance Measurements	Gauge round, ABC, H4751-1,5	A00001
2.10.3 & 2.10.4	Clearance And Creepage Distance Measurements	Gauge blade, ABC, H4728/2	A00005
24.1.1 b)	Glow-wire test	Thermometer, Fluke 52II	S05686
24.1.1 b)	Glow-wire test	Glow-wire equipment, ATS Di Galbusera	P02172
20.1 (IEC 60669-1:1998 (Third edition) + A1:1999 + A2:2006.	Mechanical Strength	Swing for impact test, <i>ATS Di Galbusera</i>	P03120